奇美電子
CHIMEI INNOLUX

PRODUCT SPECIFICATION

Doc. Number:

☐ Tentative Specification
☐ Preliminary Specification
■ Approval Specification

MODEL NO.: N173FGE
SUFFIX: P23

Customer:

APPROVED BY   **SIGNATURE**

<u>**Name / Title**</u>
Note

Please return 1 copy for your confirmation with your
signature and comments.

Approved By	Checked By	Prepared By
楊竣傑	曹文彬	鍾惠櫻
2012-11-16	2012-11-15	2012-10-29
14:37:52 CST	10:07:12 CST	15:50:42 CST

Version 2.0	22 November 2012	1 / 27

奇美電子
CHIMEI INNOLUX

PRODUCT SPECIFICATION

CONTENTS

Version 2.0	22 November 2012	**2 / 27**

PRODUCT SPECIFICATION

REVISION HISTORY

Version	Date	Page	Description
2.0	Oct.18, 2012	All	Approval specification ver.2.0 was first issued .

奇美電子
CHIMEI INNOLUX

PRODUCT SPECIFICATION

1. GENERAL DESCRIPTION

1.1 OVERVIEW

N173FGE-P23 is a 17.3" (17.3" diagonal) TFT Liquid Crystal Display module with LED Backlight unit and 40 pins LVDS interface. This module supports 1600 x 900 HD+ mode and can display 262,144 colors. The optimum viewing angle is at 6 o'clock direction

1.2 GENERAL SPECIFICATI0NS

Item	Specification	Unit	Note
Screen Size	17.3 diagonal		
Driver Element	a-si TFT active matrix	-	-
Pixel Number	1600x R.G.B. x 900	pixel	-
Pixel Pitch	0.2388 (H) x 0.2388(V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	262,144	color	-
Transmissive Mode	Normally white	-	-
Surface Treatment	Hard coating (3H), Glare	-	-

2. MECHANICAL SPECIFICATIONS

	item	Min.	Typ.	Max.	Unit	Note
Size	Horizontal (H) with PCB	392.3	392.5	393.7	mm	(1) (2) g
	Horizontal (H) w/o PCB	392.3	392.5	393.7	mm	
	Vertical (V) with PCB	223.6	223.8	224.0	mm	
	Vertical (V) w/o PCB	269.3	269.8	270.3	mm	
	Thickness (T) with PCB	-	1.65	1.75	mm	
	Thickness (T) w/o PCB	-	1.27	-	mm	
Weight		-	-	255	-	
I/F connector mounting position		The mounting inclination of the connector makes the screen center within ±0.5mm as the horizontal.				

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

(2) Connector mounting position

2.1 CONNECTOR TYPE

2.1.1 LVDS Connector
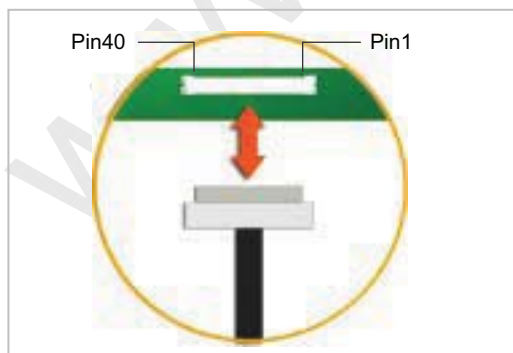
Please refer Appendix Outline Drawing for detail design.

Connector Part No.: IPEX-20455-040E-12; TYCO- 5-2069716-3

User's connector Part No: IPEX-20453-040T-01 or equivalent

PRODUCT SPECIFICATION

2.1.2 LED Light-Bar Connector

Foxconn	GB5RF101-110M-7H (10pin lock1ng)
北京鑫達榮通	1-050010-0
信盛	STM: MSK24022P10A (10 Pin 下接觸)

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CHIMEI INNOLUX   PRODUCT SPECIFICATION

3. ABSOLUTE MAXIMUM RATINGS

3.1 ABSOLUTE RATINGS OF ENVIRONMENT (Based on CMI Module)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-20	+60	ºC	(1)
Operating Ambient Temperature	T_{OP}	0	+50	ºC	(1), (2)

Note (1)   (a) 90 %RH Max. (Ta <= 40 ºC).

(b) Wet-bulb temperature should be 39 ºC Max. (Ta > 40 ºC).

(c) No condensation.

Note (2)   The temperature of panel surface should be 0 ºC min. and 60 ºC max.

Relative Humidity (%RH)
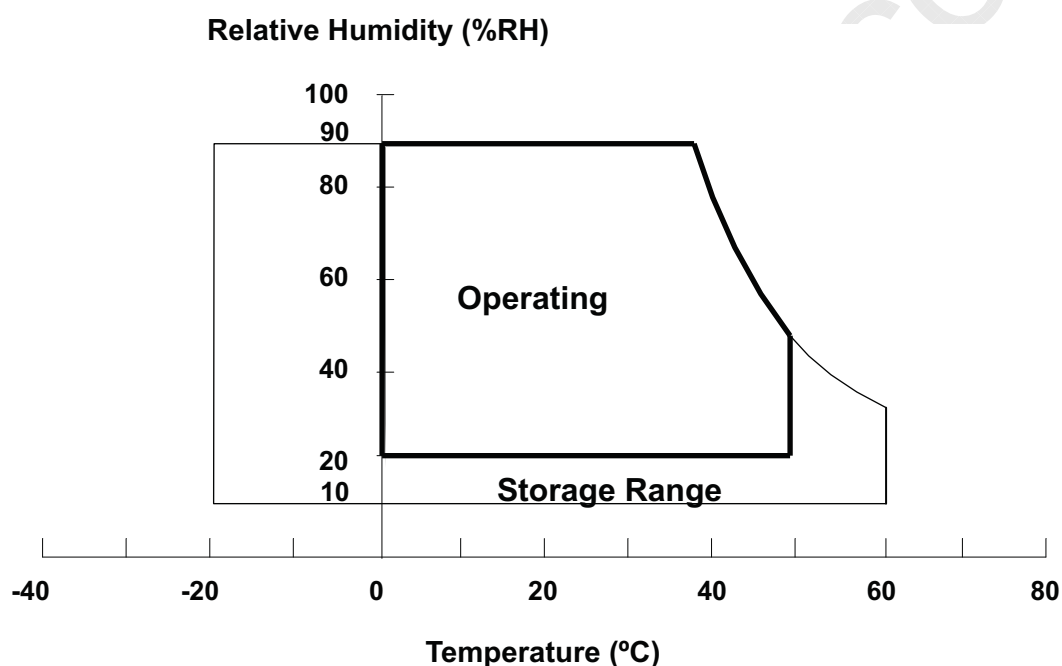
Temperature (ºC)

3.2 ABSOLUTE RATINGS OF ENVIRONMENT (OPEN CELL)

High temperature or humidity may reduce the performance of panel. Please store LCD panel within the specified storage conditions.

Storage Condition: With packing.

Storage temperature range: 25±5 ºC.

Storage humidity range: 50±10%RH.

Shelf life: 30days

PRODUCT SPECIFICATION

3.3 ELECTRICAL ABSOLUTE RATINGS (OPEN CELL)

3.3.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCCS	-0.3	+4.0	V	(1)
Logic Input Voltage	V_{IN}	-0.3	VCCS+0.3	V	
Converter Input Voltage	LED_VCCS	-0.3	24	V	(1)
Converter Output Voltage	LED+	-0.3	40	V	(1)
Converter Control Signal Voltage	LED_PWM,	-0.3	3.6	V	(1)
Converter Control Signal Voltage	LED_EN	-0.3	3.6	V	(1)

Note (1) Stresses beyond those listed in above "ELECTRICAL ABSOLUTE RATINGS" may cause permanent damage to the device. Normal operation should be restricted to the conditions described in "ELECTRICAL CHARACTERISTICS".

奇美電子
CHIMEI INNOLUX

PRODUCT SPECIFICATION

4. ELECTRICAL SPECIFICATIONS

4.1 FUNCTION BLOCK DIAGRAM
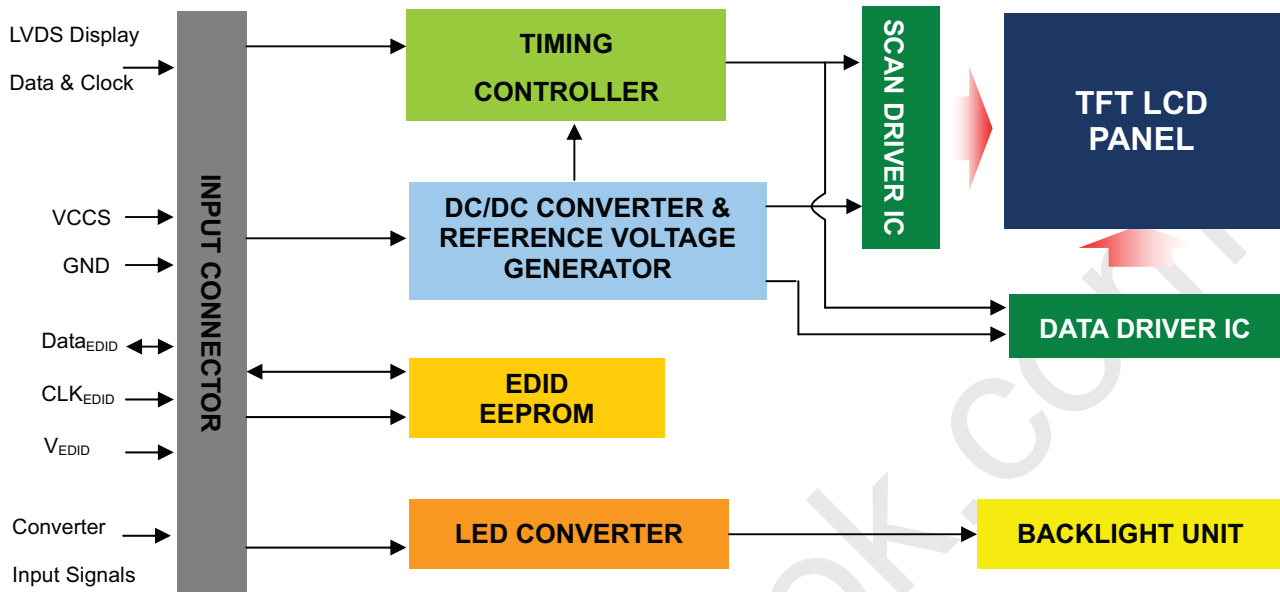
4.2. INTERFACE CONNECTIONS

4.2.1 PIN ASSIGNMENT

Pin	Symbol	Description	Remark
1	NC	Loop or No Connection	
2	VCCS	Power Supply (3.3V typ.)	
3	VCCS	Power Supply (3.3V typ.)	
4	VEDID	DDC 3.3V power	
5	BIST	Panel self test	
6	CLKEDID	DDC clock	
7	DATAEDID	DDC data	
8	RXO0-	LVDS Differential Data Input (Odd)	R0-R5, G0
9	RXO0+	LVDS Differential Data Input (Odd)	
10	VSS	Ground	
11	RXO1-	LVDS Differential Data Input (Odd)	G1~G5, B0, B1
12	RXO1+	LVDS Differential Data Input (Odd)	
13	VSS	Ground	
14	RXO2-	LVDS Differential Data Input (Odd)	B2-B5,HS,VS, DE
15	RXO2+	LVDS Differential Data Input (Odd)	
16	VSS	Ground	
17	RXOC-	LVDS Clock Data Input (Odd)	LVDS CLK
18	RXOC+	LVDS Clock Data Input (Odd)	
19	VSS	Ground	
20	RXE0-	LVDS Differential Data Input (Even)	R0-R5, G0
21	RXE0+	LVDS Differential Data Input (Even)	
22	VSS	Ground	
23	RXE1-	LVDS Differential Data Input (Even)	G1~G5, B0, B1

PRODUCT SPECIFICATION

24	RXE1+	LVDS Differential Data Input (Even)	
25	VSS	Ground	
26	RXE2-	LVDS Differential Data Input (Even)	B2-B5,HS,VS, DE
27	RXE2+	LVDS Differential Data Input (Even)	
28	VSS	Ground	
29	RXEC-	LVDS Clock Data Input (Even)	LVDS CLK
30	RXEC+	LVDS Clock Data Input (Even)	
31	LED_GND	LED Ground	
32	LED_GND	LED Ground	
33	LED_GND	LED Ground	
34	NC	Loop or No Connection	
35	LED_PWM	PWM Control Signal of LED Converter	
36	LED_EN	Enable Control Signal of LED Converter	
37	NC	No Connection (Reserve)	
38	LED_VCCS	LED Power Supply	
39	LED_VCCS	LED Power Supply	
40	LED_VCCS	LED Power Supply	

Note (1) The first pixel is odd as shown in the following figure.

奇美電子
CHIMEI INNOLUX

PRODUCT SPECIFICATION
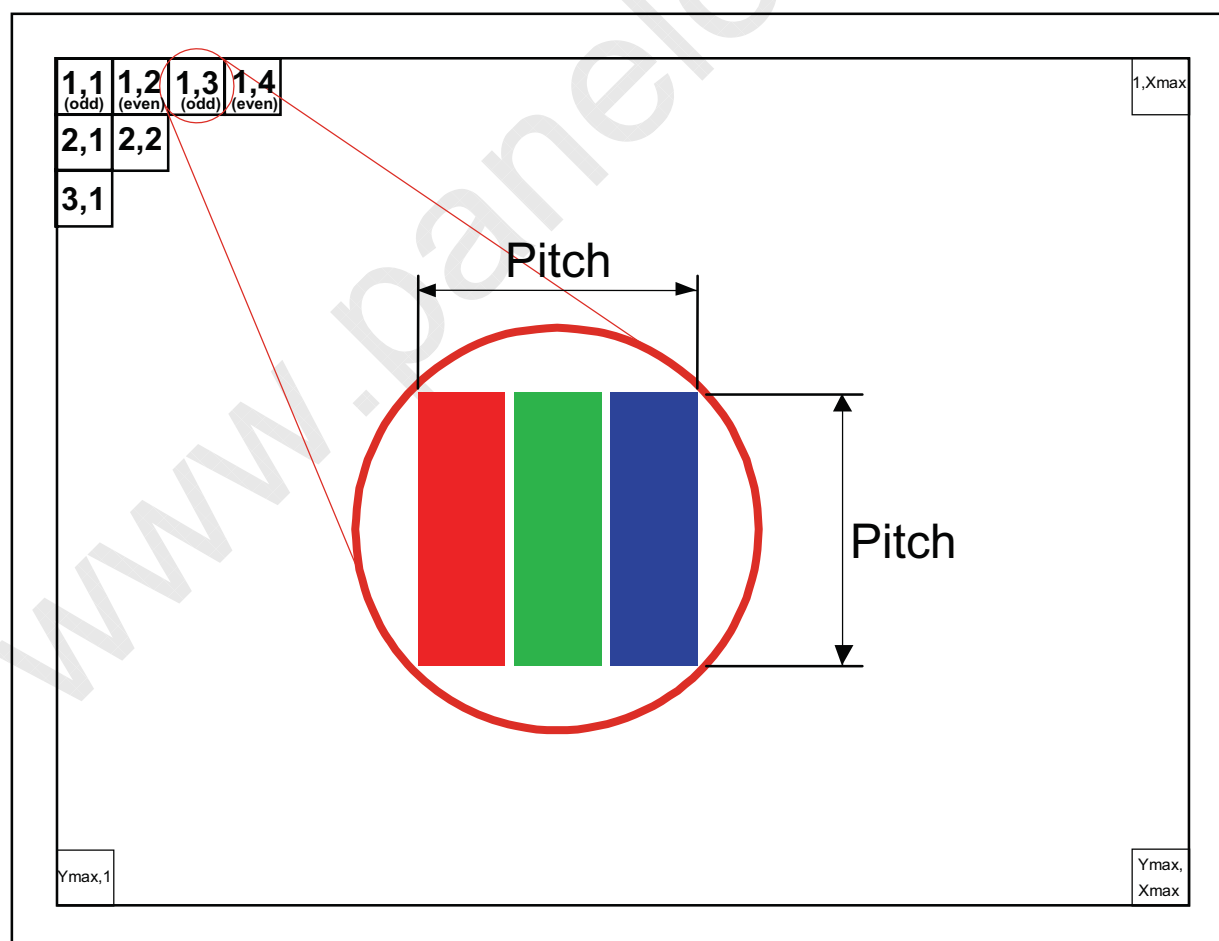
4.3 ELECTRICAL CHARACTERISTICS

4.3.1 TFT LCD OPEN CELL

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		VCCS	3.0	3.3	3.6	V	(1)-
Ripple Voltage		V_{RP}	-	50	-	mV	(1)-
Inrush Current		I_{RUSH}	-	-	1.5	A	(1),(2)
Power Supply Current	Mosaic	Icc	--	340	375	mA	(3)a
	Black		--	450	500	mA	(3)b

Note (1) The ambient temperature is Ta = 25 ± 2 ºC.

Note (2) I_{RUSH}: the maximum current when VCCS is rising

I_{IS}: the maximum current of the first 100ms after power-on

Measurement Conditions: Shown as the following figure. Test pattern: black.
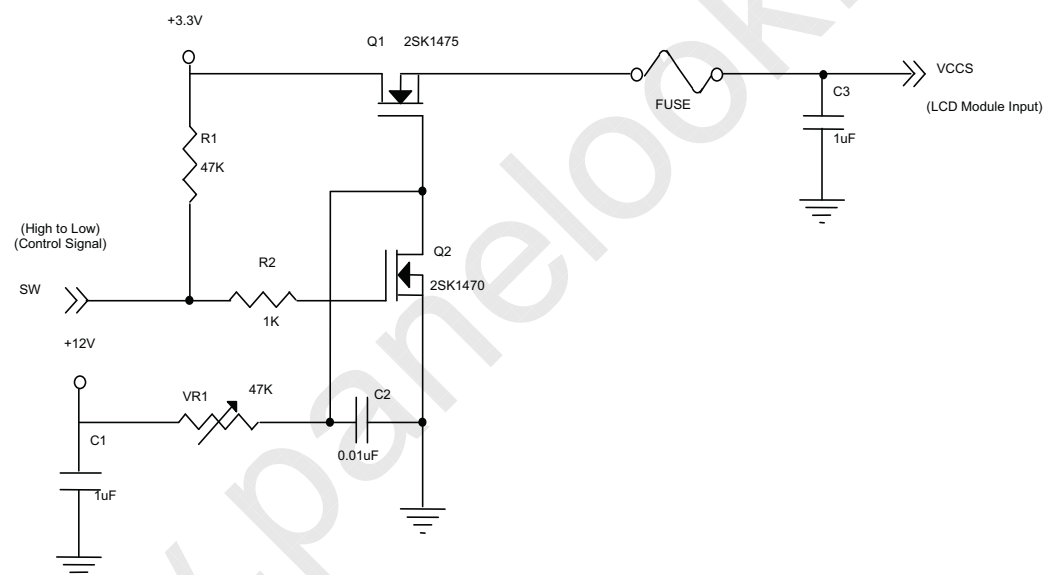
VCCS rising time is 0.5ms
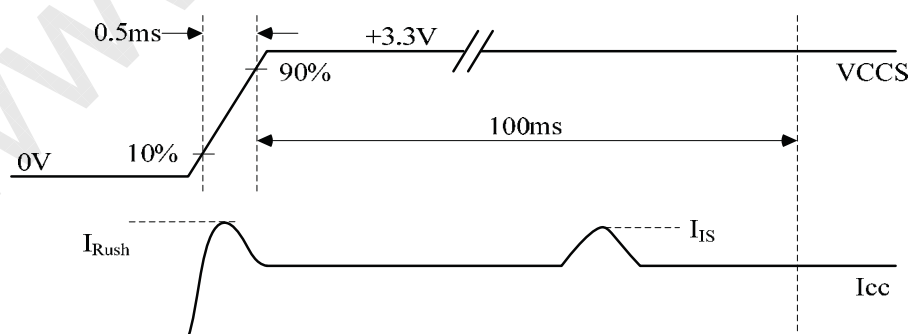
Note (3) The specified power supply current is under the conditions at VCCS = 3.3 V, Ta = 25 ± 2 ℃, DC

Current and f_v = 60 Hz, whereas a power dissipation check pattern below is displayed.

a. Mosaic Pattern

b. Black Pattern

Active Area

Active Area

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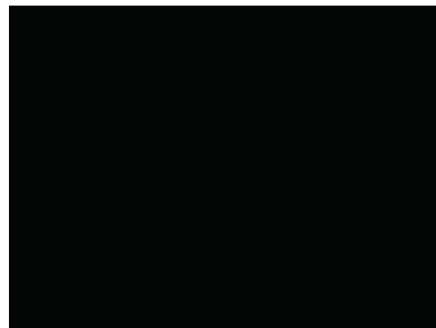
4.3.2 LED CONVERTER SPECIFICATION

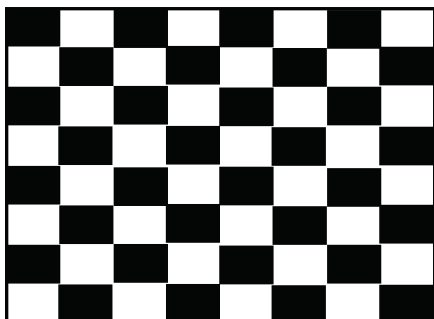| Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Input power supply voltage		LED_Vccs	6.0	12.0	21.0	V	
Converter Inrush Current		ILED$_{RUSH}$	-	-	1.5	A	(1)
EN Control Level	Backlight On		2.3	-	3.3	V	
	Backlight Off		0	-	0.5	V	
PWM Control Level	PWM High Level		2.3	-	3.3	V	
	PWM Low Level		0	-	0.5	V	
PWM Control Duty Ratio			10	-	100	%	
			5	-	100	%	(2)
PWM Control Permissive Ripple Voltage		VPWM_pp	-	-	100	mV	
PWM Control Frequency		f$_{PWM}$	190	-	2K	Hz	(3)
LED Power Current LED_VCCS =Typ.		ILED	277	364	375	mA	(4)

Note (1) ILED$_{RUSH}$: the maximum current when LED_VCCS is rising,

ILED$_{IS}$: the maximum current of the first 100ms after power-on,

Measurement Conditions: Shown as the following figure. LED_VCCS = Typ, Ta = 25 ± 2 ºC, f$_{PWM}$ = 200 Hz, Duty=100%.

PRODUCT SPECIFICATION
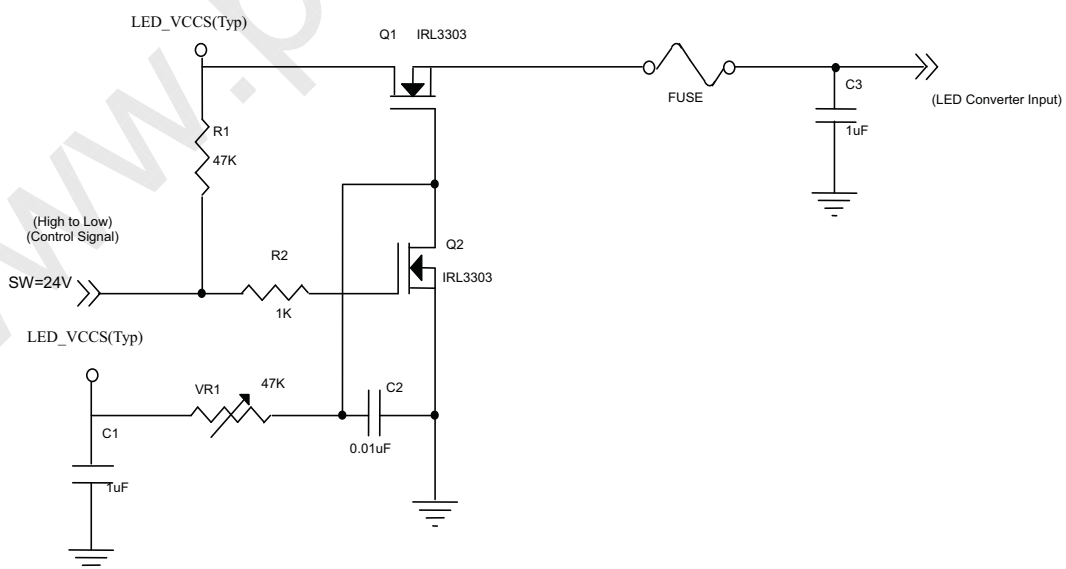
VLED rising time is 0.5ms
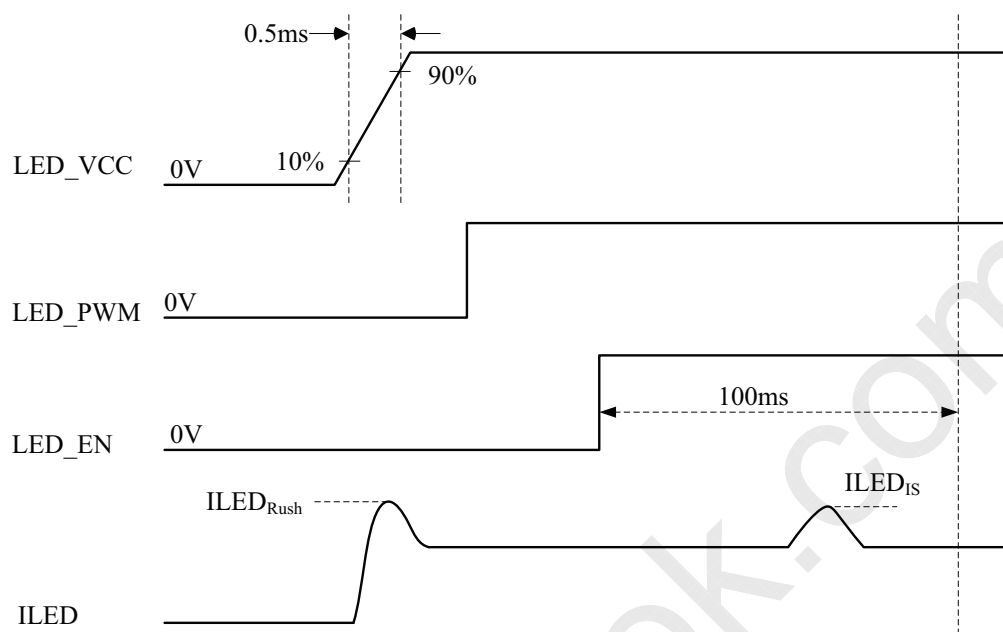
Note (2) If the PWM control duty ratio is less than 10%, there is some possibility that acoustic noise or backlight flash can be found. And it is also difficult to control the brightness linearity.

Note (3)   If PWM control frequency is applied in the range less than 1KHz, the "waterfall" phenomenon on the screen may be found. To avoid the issue, it's a suggestion that PWM control frequency should follow the criterion as below.

PWM control frequency f_{PWM} should be in the range

$$(N + 0.33) * f \leq f_{PWM} \leq (N + 0.66) * f$$

$$N : \text{Integer} \ (N \geq 3)$$

$$f : \text{Frame rate}$$

Note (4) The specified LED power supply current is under the conditions at "LED_VCCS = Typ.", Ta = 25 ± 2 ºC, f_{PWM} = 200 Hz, Duty=100%.

PRODUCT SPECIFICATION

4.4 LVDS INPUT SIGNAL TIMING SPECIFICATIONS

4.4.1 LVDS DC SPECIFICATIONS

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
LVDS Differential Input High Threshold	$V_{TH(LVDS)}$	-	-	+100	mV	(1), V_{CM}=1.2V
LVDS Differential Input Low Threshold	$V_{TL(LVDS)}$	-100	-	-	mV	(1) V_{CM}=1.2V
LVDS Common Mode Voltage	V_{CM}	1.125	-	1.375	V	(1)
LVDS Differential Input Voltage	$|V_{ID}|$	100	-	600	mV	(1)
LVDS Terminating Resistor	R_T	-	100	-	Ohm	-

Note (1) The parameters of LVDS signals are defined as the following figures.

Single Ended

Differential

4.4.2 LVDS DATA FORMAT

Signal for 1 DCLK Cycle (T)

PRODUCT SPECIFICATION
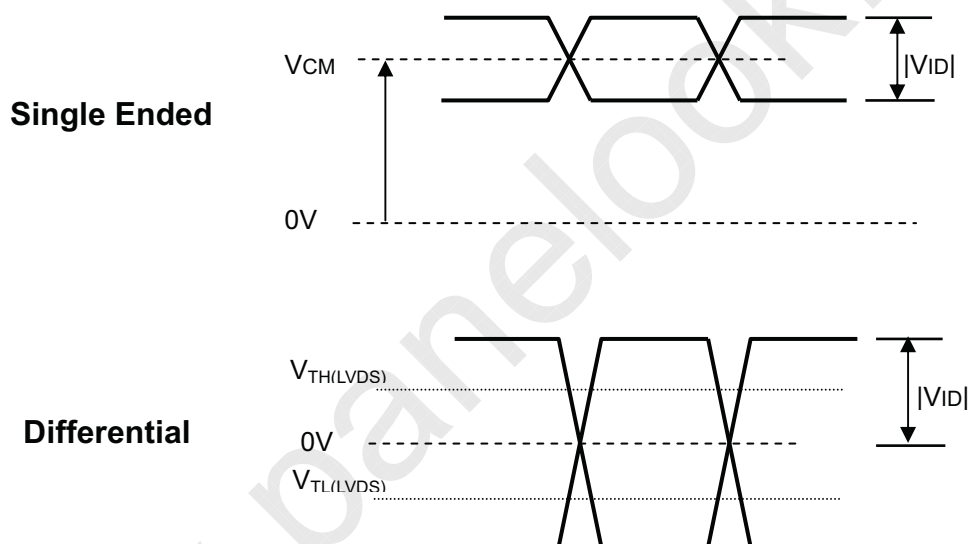
Signal for 1 DCLK Cycle (T)
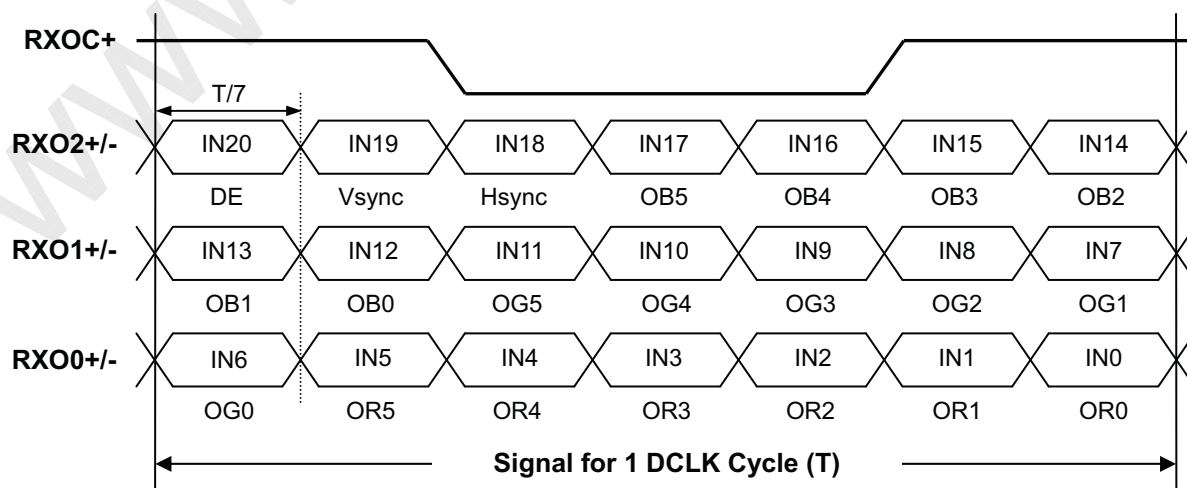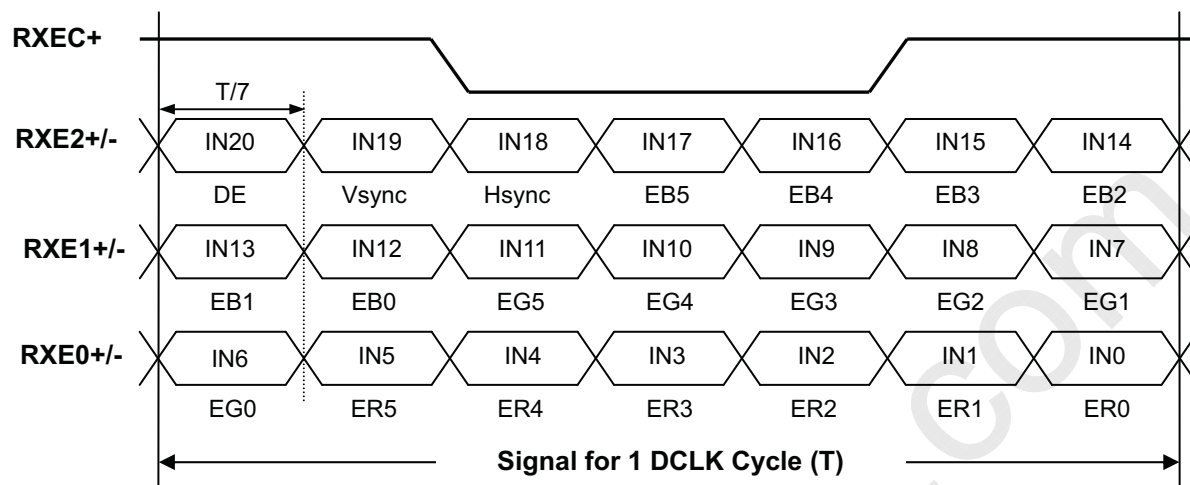
4.4.3 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 6-bit gray scale data input for the color. The higher the binary input the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																	
		Red						Green						Blue					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(61)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(61)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0

	Blue(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gray	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Scale	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Of	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Blue	Blue(61)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

PRODUCT SPECIFICATION

4.5 DISPLAY TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Refresh rate 60Hz

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
DCLK	Frequency	1/Tc	51.21	53.9	56.59	MHz	-
DE	Vertical Total Time	TV	907	926	932	TH	-
	Vertical Active Display Period	TVD	900	900	900	TH	-
	Vertical Active Blanking Period	TVB	TV-TVD	26	TV-TVD	TH	-
	Horizontal Total Time	TH	1690	1940	2025	Tc	-
	Horizontal Active Display Period	THD	1600	1600	1600	Tc	-
	Horizontal Active Blanking Period	THB	TH-THD	340	TH-THD	Tc	-

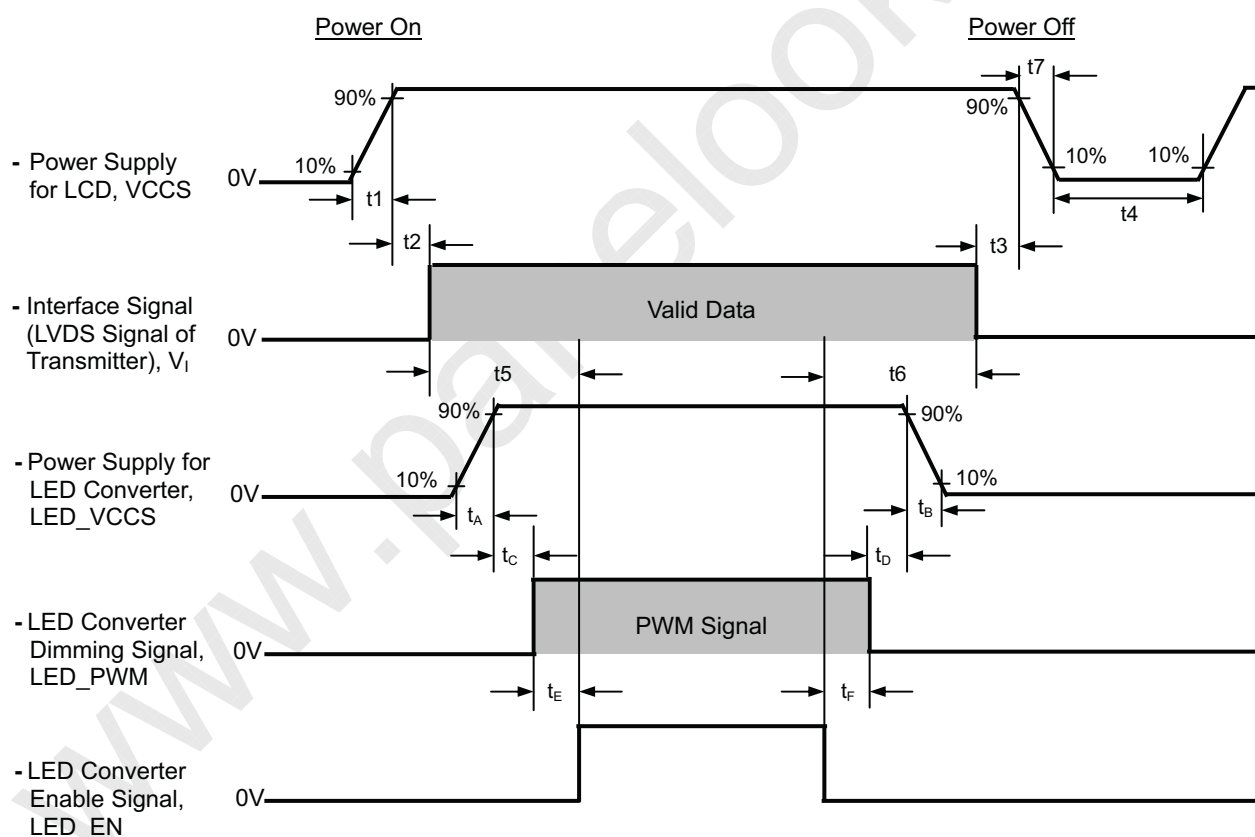Note (1) Because this module is operated by DE only mode, Hsync and Vsync are ignored.

INPUT SIGNAL TIMING DIAGRAM

PRODUCT SPECIFICATION
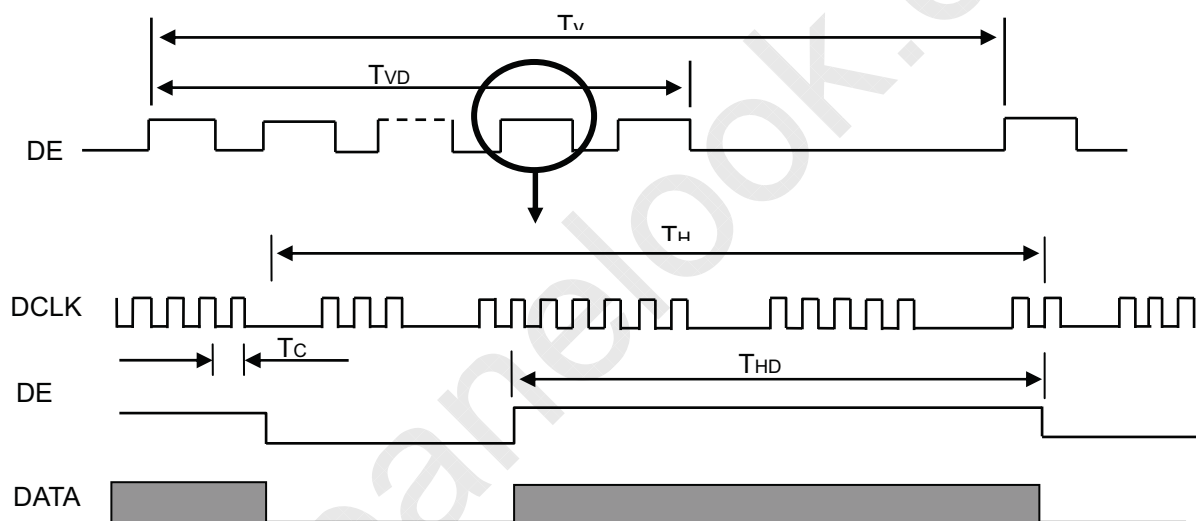
4.6 POWER ON/OFF SEQUENCE

The power sequence specifications are shown as the following table and diagram.

Symbol	Value			Unit	Note
	Min.	Typ.	Max.		
t1	0.5	-	10	Ms	
t2	0	-	50	Ms	
t3	0	-	50	Ms	
t4	500	-	-	Ms	
t5	200	-	-	Ms	
t6	200	-	-	Ms	
t7	0.5	-	10	Ms	
t_A	0.5	-	10	Ms	
t_B	0		10	Ms	
t_C	10	-	-	Ms	
t_D	10	-	-	Ms	
t_E	10	-	-	Ms	
t_F	10	-	-	Ms	

Power On   Power Off

- Power Supply for LCD, VCCS
- Interface Signal (LVDS Signal of Transmitter), V_I
- Power Supply for LED Converter, LED_VCCS
- LED Converter Dimming Signal, LED_PWM
- LED Converter Enable Signal, LED_EN

Valid Data

PWM Signal

Note (1) Please don't plug or unplug the interface cable when system is turned on.

Note (2) Please avoid floating state of the interface signal during signal invalid period.

Note (3) It is recommended that the backlight power must be turned on after the power supply for LCD and the interface signal is valid.

PRODUCT SPECIFICATION

5. OPTICAL CHARACTERISTICS

5.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V_{CC}	3.3	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		

The measurement methods of optical characteristics are shown in Section 5.2. The following items should be measured under the test conditions described in Section 5.1 and stable environment shown in Note (5).
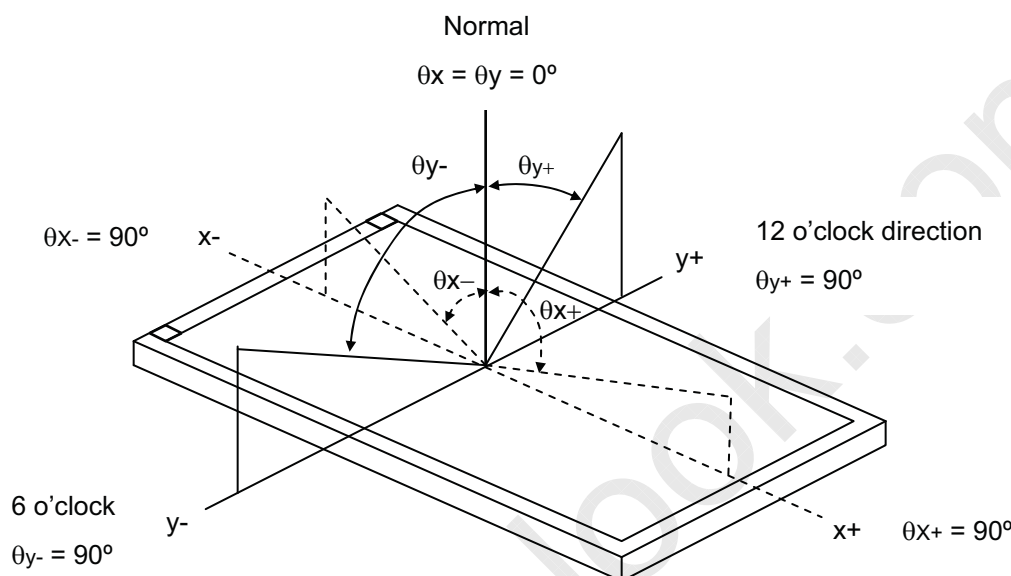
5.2 OPTICAL SPECIFICATIONS

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Center Transmittance		T%	$\theta_x=0°$, $\theta_Y=0°$	5.3	6.3			(1) , (5) , (8)
Contrast Ratio		CR	CS-1000T, CMO BLU	500	650			(1) ,(3) , (5)
Transmittance uniformity		δ T%	$\theta_x=0°$, $\theta_Y=0°$ BM-5A			1.25		(1) , (5) , (7)
Response Time		T_R	$\theta_x=0°$, $\theta_Y=0°$	-	3	8	ms	(4)
		T_F		-	7	13	ms	
Color Chromaticity	Red	Rcx	$\theta_x=0°$, $\theta_Y=0°$ CS-1000T Standard light source "C"	Typ.-0.03	0.636	Typ.+0.03	-	(0), (5)
		Rcy			0.324		-	
	Green	Gcx			0.310		-	
		Gcy			0.562		-	
	Blue	Bcx			0.152		-	
		Bcy			0.097		-	
	White	Wcx			0.311		-	
		Wcy			0.327		-	
Viewing Angle	Horizontal	θ_x+	CR≥10 BM-5A	40	45	-	Deg.	(1),(3),(5)
		θ_x-		40	45	-		
	Vertical	θ_Y+		15	20	-		
		θ_Y-		40	45	-		

Note (0) Light source is the standard light source "C" which is defined by CIE and driving voltages are based on suitable gamma voltages. The calculating method is as following：

1. Measure Module's and BLU's spectrums. White is without signal input and R, G, B are with signal input. BLU is supplied by CMI.
2. Calculate cell's spectrum.
3. Calculate cell's chromaticity by using the spectrum of standard light source "C"

PRODUCT SPECIFICATION

Note (1) Light source is the BLU which is supplied by CMO and driving voltages are based on suitable gamma voltages. White is without signal input and R, G, B are with signal input. SPEC is judged by CMO's golden sample.

Note (2) Definition of Viewing Angle (θx, θy):

Normal

$\theta x = \theta y = 0º$

$\theta y-$ $\theta y+$

$\theta x- = 90º$ x-

12 o'clock direction

$\theta x-$ y+

$\theta x+$

$\theta y+ = 90º$

6 o'clock   y-

$\theta y- = 90º$

x+ $\theta x+ = 90º$

Note (3) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.
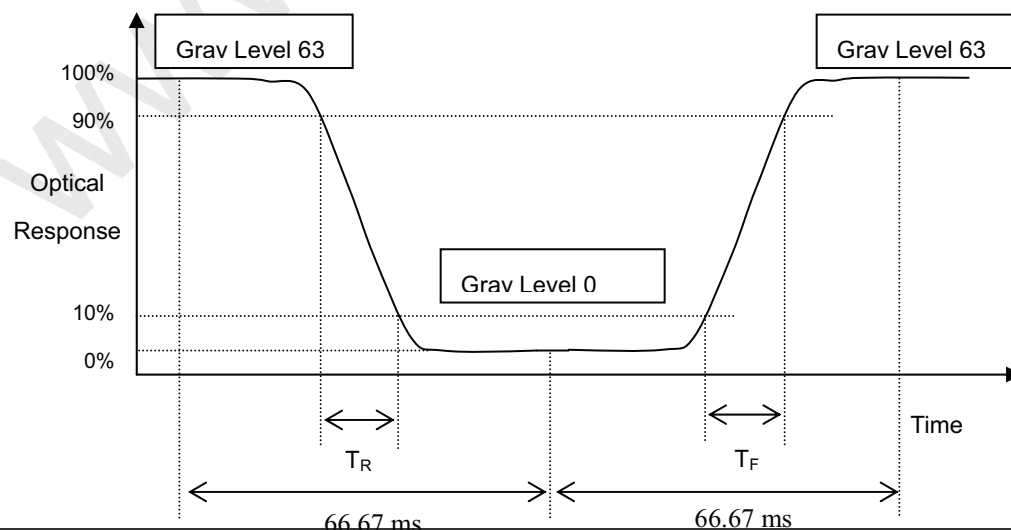
Contrast Ratio (CR) = L63 / L0

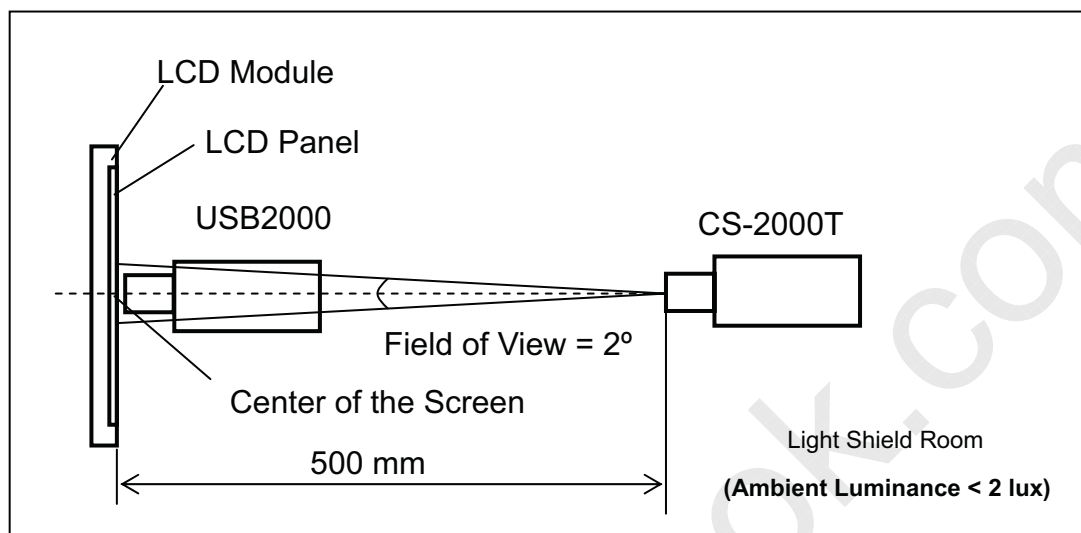L63: Luminance of gray level 63

L 0: Luminance of gray level 0

CR = CR (1)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (6).

Note (4) Definition of Response Time (T_R, T_F):

Grav Level 63   Grav Level 63

100%

90%

Optical

Response

Grav Level 0

10%

0%

Time

T_R T_F

66.67 ms   66.67 ms

Note (5) Measurement Setup:

The LCD module should be stabilized at given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.

LCD Module

LCD Panel

USB2000

CS-2000T

Field of View = 2º

Center of the Screen

500 mm

Light Shield Room

(Ambient Luminance < 2 lux)

Note (6) Definition of Transmittance Variation (δT%):
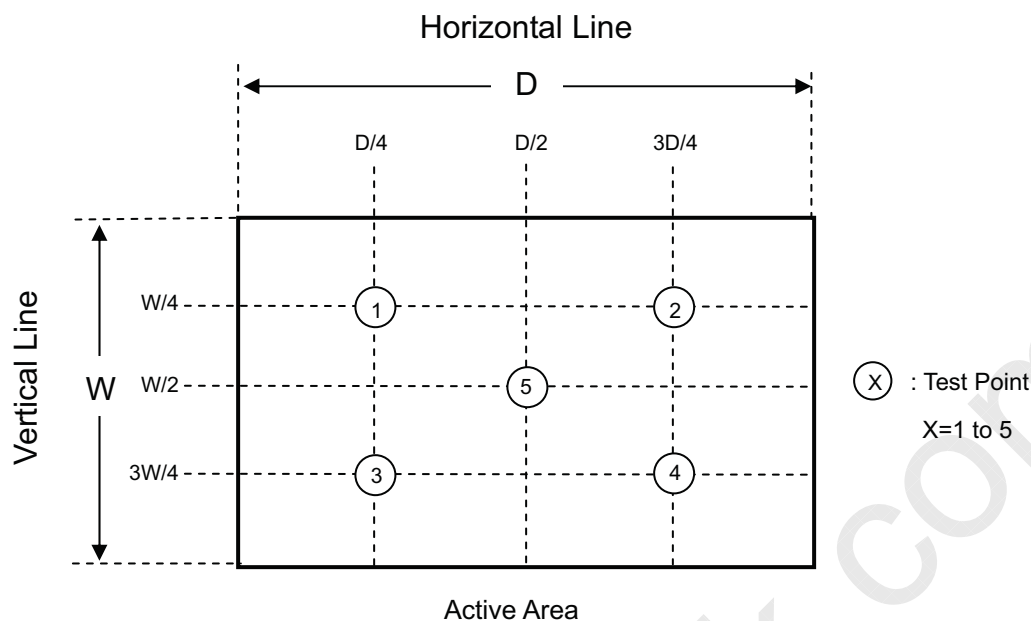
Measure the transmittance at 5 points

$$\delta T\% = \frac{\text{Maximum } [T\%(1), T\%(2), \dots T\%(5)]}{\text{Minimum } [T\%(1), T\%(2), \dots T\%(5)]}$$

Note (7) Definition of Transmittance (T%):

Module is without signal input.

BLU is supplied by CMO.

$$\text{Transmittance} = \frac{\text{Luminance of LCD module}}{\text{Luminance of backlight}} \ast 100\%$$

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PRODUCT SPECIFICATION

Horizontal Line

Active Area

Note (8) The listed optical specifications refer to the initial value of manufacture, but the condition of the specifications after long-term operation will not be warranted.
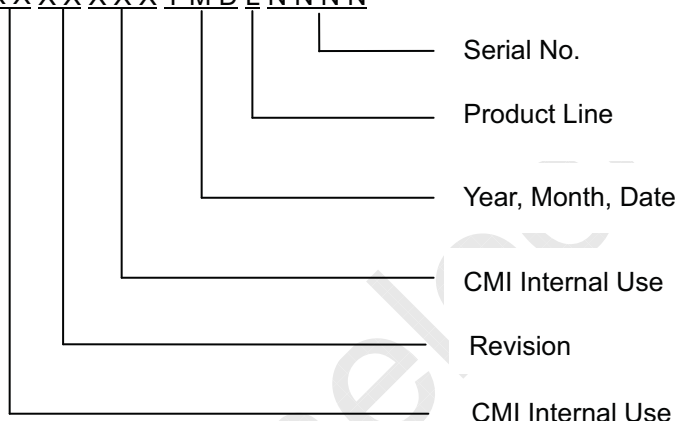
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PRODUCT SPECIFICATION

6. PACKING

6.1 CMI OPEN CELL LABEL

The barcode nameplate is pasted on each OPEN CELL as illustration for CMI internal control.

Made in XXXX

N173FGE-P23   XXXXXXXYMDLNNNN   Rev. XX

(a) Model Name: N173FGE   - P23

(b) Revision: Rev. XX, for example: C1, C2 …etc.

(c) Serial ID: X X X X X X X Y M D L N N N N

    Serial No.

    Product Line

    Year, Month, Date

    CMI Internal Use

    Revision

    CMI Internal Use

Serial ID includes the information as below:

(a) Manufactured Date: Year: 0~9, for 2010~2019

    Month: 1~9, A~C, for Jan. ~ Dec.

    Day: 1~9, A~Y, for 1st to 31st, exclude I , O and U

(b) Revision Code: cover all the change

(c) Serial No.: Manufacturing sequence of product

(d) Product Line: 1 -> Line1, 2 -> Line 2, …etc.

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PRODUCT SPECIFICATION

6.2 Package Reliability

(1) Carton Packing should have no failure in the following reliability test items

Test Item	Test Conditions	Note
Packing Vibration	ISTA STANDARD Random, Frequency Range: 1 – 200 Hz Top & Bottom: 30 minutes (+Z), 10 min (-Z), Right & Left: 10 minutes (X) Back & Forth 10 minutes (Y)	Non Operation

6.3 CARTON
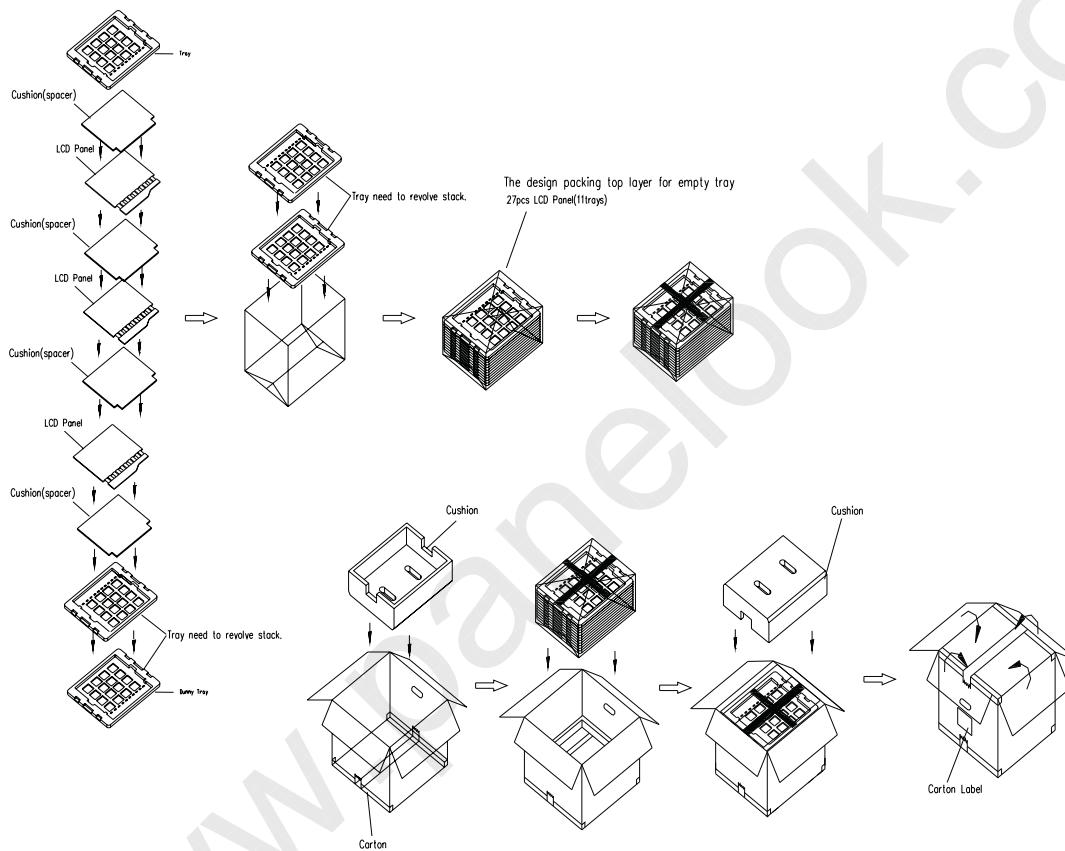
(1) Carton dimensions : 570(L)x450(W)x320(H)mm
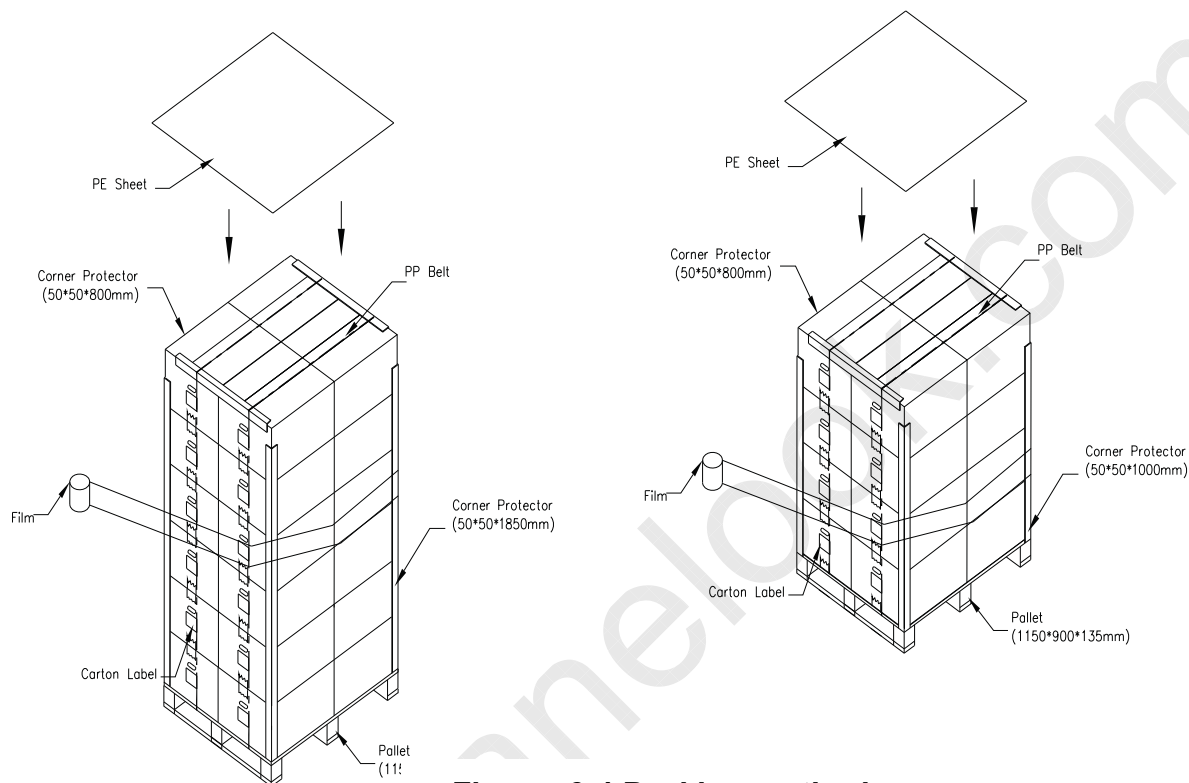(2) 27 LCD Cells+PCB/Carton

Figure. 6-3 Packing method

PRODUCT SPECIFICATION

6.4 PALLET

Sea and Land Transportation

Air Transportation

Figure. 6-4 Packing method

7. PRECAUTIONS

7.1 HANDLING PRECAUTIONS

(1) The module should be assembled into the system firmly by using every mounting hole. Be careful not to twist or bend the module.

(2) While assembling or installing modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.

(3) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.

(4) Do not press or scratch the surface harder than a HB pencil lead on the panel because the polarizer is very soft and easily scratched.

(5) If the surface of the polarizer is dirty, please clean it by some absorbent cotton or soft cloth. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage the polarizer due to chemical reaction.

(6) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.

(7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contacting with hands, legs or clothes, it must be washed away thoroughly with soap.

(8) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.

(9) Do not disassemble the module.

(10) Do not pull or fold the LED wire.

(11) Pins of I/F connector should not be touched directly with bare hands.

7.2 STORAGE PRECAUTIONS

(1) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.

(2) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.

(3) It may reduce the display quality if the ambient temperature is lower than 10 ºC. For example, the response time will become slowly, and the starting voltage of LED will be higher than the room temperature.

7.3 OPERATION PRECAUTIONS

(1) Do not pull the I/F connector in or out while the module is operating.

(2) Always follow the correct power on/off sequence when LCD module is connecting and operating. This can prevent the CMOS LSI chips from damage during latch-up.

(3) The startup voltage of Backlight is approximately 1000 Volts. It may cause electrical shock while assembling with converter. Do not disassemble the module or insert anything into the Backlight unit.

PRODUCT SPECIFICATION

Appendix. OUTLINE DRAWING

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